

**Notice of Allowability**

Application No.

10/782,628

Applicant(s)

CYRILLE ET AL.

Examiner

William J. Klimowicz

Art Unit

2627

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to \_\_\_\_.
2. ☒ The allowed claim(s) is/are 1-7.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_.

***Reasons for Allowance***

The following is an Examiner's statement of reasons for allowance:

The prior art of record fails to fairly, teach, show or suggest, by either anticipating or rendering obvious, the invention as set forth in the claims of the instant application.

Furthermore, a search made does not detect the combined claimed elements as set forth in the pending claims. Additionally, the reasons for allowance of the claims over the prior art of record is believed to be readily clear, self evident and apparent from the claim language set forth in sole independent claim 1, when compared and contrasted with the prior art.

More particularly, the instant invention (as set forth in sole independent claim 1) provides for a method for setting a remanent magnetization of a bias subassembly for biasing a free layer of a magnetic sensor. The claimed method includes providing within the bias subassembly, a first bias layer of ferromagnetic material having a coercivity  $H_{c1}$ ; providing a first bias to the free layer; providing within the bias subassembly a second bias layer of ferromagnetic material having a coercivity  $H_{c2}$  greater than  $H_{c1}$  and providing a second bias to the free layer; providing within the bias subassembly a decoupling layer disposed between the first and second bias layers to substantially eliminate exchange coupling between the first and second bias layers; and applying a first bias magnetic field having a magnetic field strength  $H_1$  to the bias subassembly, wherein  $H_1$  is greater than  $H_{c1}$  and  $H_1$  is less than  $H_{c2}$ ; whereby the first bias is altered, and the second bias is substantially unaltered.

The closet prior art includes Yuan et al. (US 5,739,987) who discloses a magnetoresistive sensor having biasing subassemblies (18-19), providing a bias to the free layer of the

Art Unit: 2627

magnetoresistive layer sensor provided therebetween. Each biasing subassembly is made up from multiple stabilization layers.

Yuan et al. (US 5,739,987), however, does not teach, show or suggest, wherein a first bias layer of ferromagnetic material having a coercivity  $H_{c1}$  provides a first bias to the free layer and wherein within the bias subassembly, a second bias layer of ferromagnetic material has a coercivity  $H_{c2}$  greater than  $H_{c1}$ , thus providing a second bias to the free layer, wherein the bias subassembly includes a decoupling layer disposed between the first and second bias layers to substantially eliminate exchange coupling between the first and second bias layers, wherein a first bias magnetic field is applied having a magnetic field strength  $H_1$  to the bias subassembly, wherein  $H_1$  is greater than  $H_{c1}$  and  $H_1$  is less than  $H_{c2}$ , such that the first bias is altered, and the second bias is substantially unaltered, as set forth in claim 1 of the instantly claimed invention.

Thus, Yuan et al. (US 5,739,987) does not disclose the invention as set forth in the manner, function and relationship relative to other claimed structure as prescribed by the independent claim 1.

Additionally, Yuan et al. (US 5,739,987) does not provide, alone or in combination with the art of record or general knowledge within the art, any suggestion or teaching for the invention as set forth in the independent claim 1.

### ***Conclusion***

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee.

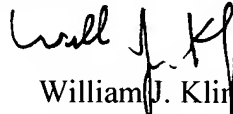
Art Unit: 2627

Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William J. Klimowicz whose telephone number is (571) 272-7577. The examiner can normally be reached on Monday-Thursday (6:30AM-5:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Thi Nguyen can be reached on (571) 272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
William J. Klimowicz  
Primary Examiner  
Art Unit 2627

WJK

1.